CLAIM AMENDMENT

The Applicants cancel claim **8** and currently amend claims **7, 9, 10**.

1. – 6. *(withdrawn)*

7.*(previously & currently amended)* A metal embedded sensor comprising:

a. a metal structure comprising:

i. a metal having a melting temperature above 660°C;

ii. a coating metallic layer;

iii. an embedding metallic layer on the coating metallic layer; and

b. a sensor embedded inside the metal structure;

~~wherein said metal structure is of a thickness and a metal such that externally induced local thermal rises occurring during molten metal forming processes above 660°C of a bulk material is transformed into balanced heat load onto the sensor for a uniformly expanding without cracking of it, said bulk material being molted in immediate contact to said metal structure, and~~

wherein said metal structure is in direct adhesive contact with said sensor.

8. *(cancelled)*

9. *(currently amended)* The metal embedded sensor of claim ~~8~~ 7, wherein the embedding metallic layer is formed by laser deposition.

10. *(currently amended)* The metal embedded sensor of claim ~~8~~ 7, wherein the coating metallic layer comprises a first metallic layer, and a second metallic layer on the first metallic layer.

11. *(original)* The metal embedded sensor of claim 10, wherein one or more of the first and the second metallic layers is formed by sputtering.

12. *(original)* The metal embedded sensor of claim 10, wherein one or more of the first and the second metallic layers is formed by electroplating.

13. *(original)* The metal embedded sensor of claim 10, wherein the first metallic layer is formed by sputtering, and the second metallic layer is formed by electroplating.

14. *(original)* The metal embedded sensor of claim 10, wherein the thickness of the first metallic layer is between about one and about three microns.

15. *(original)* The metal embedded sensor of claim 10, wherein the first metallic layer comprises a metal selected from the group consisting of copper, nickel, iron, and platinum.

16. *(original)* The metal embedded sensor of claim 10, wherein the thickness of the second metallic layer is between about one-quarter and about two millimeters.

17. *(original)* The metal embedded sensor of claim 10, wherein the second metallic layer comprises a metal selected from the group consisting of copper, nickel, iron, and platinum.

18. *(original)* The metal embedded sensor of claim 17, wherein the sensor is in the form of a fiber optic sensor.

19. *(original)* The metal embedded sensor of claim 18, further comprising an adhesive layer coating the sensor.

20. *(original)* The metal embedded sensor of claim 19, wherein the adhesive layer comprises titanium.

21. *(original)* The metal embedded sensor of claim 20, wherein the thickness of the adhesive layer is between about 2nm and about 3nm.

22. *(previously amended)* The metal embedded sensor of claim 7, wherein the sensor is in the form of a thin film thermo-mechanical sensor, and wherein the metal structure comprises:
    a. a coating metallic layer comprising
        i. a first metallic layer;
        ii. a second metallic layer on the first metallic layer, said second metallic layer selected from the group consisting of copper, nickel, iron, and platinum; and
    b. an embedding metallic layer on the coating metallic layer.

23. *(previously amended)* The metal embedded sensor of claim 22, wherein the sensor comprises:
    a. a first insulating layer ;
    b. a sensor layer disposed on the first insulating layer;
    c. a second insulating layer disposed on the sensor layer; and
    wherein said first insulating layer and said second insulating layers are deposited of an insulating material with a maximum thickness for providing adequate electric insulation of said sensor layer in operation.

24. *(original)* The metal embedded sensor of claim 23, wherein the sensor further comprises an adhesive layer contacting the first insulating layer.

25. *(original)* The metal embedded sensor of claim 24, wherein the adhesive layer comprises titanium.

26. *(original)* The metal embedded sensor of claim 25, wherein the thickness of the adhesive layer is between about 2nm and about 3nm.

27. *(original)* The metal embedded sensor of claim 26, wherein the sensor further comprises a substrate contacting the adhesive layer.

28. *(original)* The metal embedded sensor of claim 27, wherein the substrate comprises a metallic substrate.

29. *(original)* The metal embedded sensor of claim 28, wherein the substrate comprises stainless steel.

30. *(original)* The metal embedded sensor of claim 23, wherein the sensor layer comprises constantan.

31. *(original)* The metal embedded sensor of claim 23, wherein the thickness of the first insulating layer is between about 10nm and about 15nm.

32. *(original)* The metal embedded sensor of claim 23, wherein the thickness of the second insulating layer is between about 10nm and about 15nm.

33. *(original)* The metal embedded sensor of claim 23, wherein the first and the second insulating layers comprise insulating oxides.

34. *(original)* The metal embedded sensor of claim 33, wherein the first and the second insulating layers comprise alumina.

35. – 63. *(withdrawn)*